

August 30, 2017

**VIA ELECTRONIC FILING**

Ms. Jocelyn Boyd  
Chief Clerk/Administrator  
Public Service Commission of South Carolina  
101 Executive Center Dr., Suite 100  
Columbia, SC 29210

RE: Proposed Modifications to the Residential HVAC Energy Efficiency Program – Air Conditioning, Modifications to the Residential Energy Efficient Appliances and Devices Program, and Termination of the Residential HVAC Energy Efficiency Program – Tune and Seal  
**Docket Number: 2013-298-E**

Dear Ms. Boyd:

Pursuant to Commission Order No. 2013-889 issued December 20, 2013, in Docket No. 2013-298-E, Duke Energy Carolinas, LLC (“DEC” or the “Company”) hereby submits for approval its proposed modifications to its Residential HVAC Energy Efficiency Program – Air Conditioning (“HVAC-EE Program”), modifications to the Company’s Residential Energy Efficient Appliances and Devices Program (“Appliances and Devices Program”), and the elimination of DEC’s Residential HVAC Energy Efficiency Program – Tune and Seal (“Tune and Seal”). This letter is accompanied by the following:

1. Attachment A – Proposed Program Tariff;
2. Attachment B – The projected program participation and impacts data;
3. Attachment C – The program cost-effectiveness test results;
4. Attachment D – The proposed Appliances and Devices Program Tariff; and
5. Attachment E – The existing Tune and Seal Tariff for termination.

The purpose of this Program is to address the largest single source of energy consumption in a residential customer’s home by encouraging residential customers in existing homes to become more energy efficient through the installation of high efficiency air conditioners and heat pumps (“HVAC”). The Program also provides incentives for duct repair, insulation and sealing, heat pump water heaters, high efficiency room air conditioners, and HVAC equipment audits.

Although this Program is a long-standing and critical component of the Company's portfolio of energy efficiency programs, its cost-effectiveness has become challenged. This challenge is primarily driven by the fact that, as the efficiency standards have advanced, the incremental efficiency associated with each successive SEER rating decreases, while the incremental cost of exceeding the standard SEER rating increases. DEC is requesting the commission to approve the following modifications to its Programs in order to enhance the HVAC-EE Program's cost effectiveness:

#### HVAC-EE Program

1. As with the corresponding DEP proposal in Docket No. 2016-149-E, rename the HVAC-EE Program as "Residential Service - Smart \$aver Energy Efficiency Program" ("Smart \$aver");
2. Eliminate the existing tier structure for HVAC incentives; and
3. Remove incentives for HVAC devices with a SEER of less than 15.

#### Appliances and Devices Program

1. Move the high efficiency heat pump water heater and the pool pump measures from the Appliances and Devices Program to the new Residential Smart \$aver Program.

#### Tune and Seal Program

1. Discontinue HVAC tune up measures;
2. Discontinue duct insulation measures;
3. Move all remaining Tune and Seal Program measures from the Tune and Seal Program to the new Residential Smart \$aver Program; and
4. Terminate the Tune and Seal Program.

In addition, DEC proposes to modify the HVAC-EE Program tariff to mirror the tariff for the related Duke Energy Progress, LLC ("DEP") program - i.e., the Home Energy Improvement Program ("HEIP"). DEC and DEP are requesting that both the HVAC-EE Program and HEIP, respectively, each be renamed "Residential Service - Smart \$aver Energy Efficiency Program." A modified version of the HEIP tariff is being filed for approval in Docket No. 2016-149-E concurrently with DEC's request in this docket.

As HEIP provides measures contained in three of DEC's current programs (HVAC-EE, the Appliances and Devices Program, and Tune and Seal), in order to provide consistency with the proposed DEP HEIP program offerings and tariff and to provide certain economies such as joint program evaluations, all three of the aforementioned DEC programs require modification.

Duke Energy Carolinas believes the requested program modifications will substantially increase the cost-effectiveness of the former HVAC-EE Program (now Smart \$aver). The Company has modeled the new Residential Smart \$aver Program's cost effectiveness results, with the proposed modifications and the results are provided in the following table:

Cost Effectiveness Tests	Cost Effectiveness Results
Utility Cost Test ( <i>UCT</i> )	1.98
Total Resource Cost Test ( <i>TRC</i> )	1.08
Rate Impact Measure Test ( <i>RIM</i> )	0.78
Participant Test	1.72

DEC requests that the Commission:

1. Approve the Residential Service - Smart \$aver Energy Efficiency Program and tariff (formerly known as the HVAC Energy Efficiency Program - Air Conditioning until such time that the Commission orders otherwise;
2. Approve the modifications to the Residential Energy Efficient Appliances and Devices Program and tariff;
3. Approve the discontinuation of the Residential HVAC Energy Efficiency Program - Tune and Seal;

DEC requests the recovery of applicable Program costs, net lost revenues, and utility incentives and will seek recovery of these costs through its annual Demand-Side Management and Energy Efficiency ("DSM/EE") cost-recovery rider, consistent with the DSM/EE cost recovery procedures approved in Docket No. 2013-298-E.



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Litigation + Business

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Please feel free to contact me should there be any questions or issues.

Yours truly,

Frank R. Ellerbe, III

FRE:tch

Enclosures

cc: Shannon B. Hudson, Esquire (via email)  
Andrew M. Bateman, Esquire (via email)  
Stephanie U. (Roberts) Eaton, Esquire (via email)  
Derrick Price Williamson, Esquire (via email)  
J. Blanding Holman, IV, Esquire (via email)  
Heather Shirley Smith, Deputy General Counsel (via email)  
Rebecca J. Dulin, Senior Counsel (via email)

RESIDENTIAL - SMART \$AVER® ENERGY EFFICIENCY PROGRAM

PURPOSE

The purpose of this program is to encourage the purchase and installation of energy conservation measures designed to increase energy efficiency in new or existing residential dwellings.

PROGRAM

- The program is available to owners of individually-metered residences including single family detached, duplexes, townhomes, condominiums and mobile homes who are served on a residential service schedule.
- The types of equipment, products, and services eligible for incentives may include but are not limited to the following:
  - Heating Ventilation and Air Conditioning (HVAC) equipment.
  - Smart thermostats
  - Thermal boundary improvements
  - HVAC duct improvements
  - Water conditioning and/or pumps
  - Other high efficiency equipment, products, and services as determined by the Company on a case by case basis.
- New HVAC equipment must (1) achieve or exceed the minimum Seasonal Energy Efficiency Ratio (SEER), Energy Efficiency Ratio (EER), and/or Heating Seasonal Performance Factor (HSPF) allowed by law and (2) meet all other Duke Energy requirements to achieve designated energy savings.
- The new HVAC system must include a properly matched outdoor unit and inside coil, which must be listed as such by the Air Conditioning, Heating and Refrigeration Institute (AHRI) or any additional certification directory as approved by Duke Energy.
- Qualifying Smart Thermostats (Wi-Fi enabled) must be installed at the time of a qualifying HVAC installation and may be subject to Duke Energy requirements regarding installation, installer, programming, functionality, and square footage of conditioned space.
- Duke Energy will establish performance requirements deemed necessary to ensure achievement of minimum energy savings for other equipment, products, and services offered for incentives. Parameters related to these performance requirements may include, but are not limited to, diagnostic testing, size of conditioned area, building/structure type, energy reduction achievement, installer/installation, and products election.
- All improvements eligible for payment under this program must be installed based on manufacturer's recommendations and the Company's specifications, including installation by a Company approved contractor, unless otherwise noted in program requirements. Detailed requirements are available on the Company's website at [www.duke-energy.com](http://www.duke-energy.com).
- The Company may vary the incentive by type of equipment and differences in efficiency to induce customers to purchase greater levels of efficiency at the minimum necessary incentive amount. The Company may offer multiple levels of incentives corresponding to varied efficiency levels of equipment or service.
- The Company reserves the right to adjust the incentive on a periodic basis, as appropriate, to reflect changes to efficiency standards and market conditions.
- The Company reserves the right to limit the availability of incentives by the type of residential structures required to ensure achievement of energy savings.
- The current amount of the incentive payment for eligible equipment, products, and services will be posted to the Company's website at [www.duke-energy.com](http://www.duke-energy.com).
- Incentives may be limited to one of any product, per residence, under all Company Energy Efficiency Programs.
- With Company approval, the owner or customer may designate that incentive be provided to a third-party.

RESIDENTIAL - SMART \$AVER® ENERGY EFFICIENCY PROGRAM

- To qualify for payment under this program, qualifying improvements must be made on or after September 1, 2017 and the application for payment must be made within 90 days of completion of the work
- All energy conservation measures installed shall be subject to inspection by Company for the purposes of program evaluation, measurement, and verification.

PAYMENT

The Company's incentives, for individual equipment, products, and services may be offered in a variety of ways, including, but not limited to, point-of-sale discounts, checks, and prepaid credit cards. Incentive payments shall be determined by the Company in an amount not to exceed the following:

- HVAC equipment installations \$600
- Thermal boundary improvements \$250
- Duct system improvements \$100
- Variable speed pool pump installations \$300
- Heat Pump Water Heater installations \$350
- For all other appliances and devices provided under this program the incentive will be an amount not to exceed 50% of the installed cost difference between standard equipment or service and higher efficiency equipment or service.

COMPANY RETENTION OF PROGRAM BENEFITS

Incentives and other considerations offered under the terms of this Program are understood to be an essential element in the recipient's decision to participate in the Program. Upon payment of these considerations, Company will be entitled to any and all environmental, energy efficiency, and demand reduction benefits and attributes, including all reporting and compliance rights, associated with participation in the Program.

**Attachment B**  
Participation

Smart \$aver Energy Efficiency Program		
1	Measure Life (Average)	14
2	Free Rider % (Average)	18.4%
3	Incremental Participants Year 1	10,661
4	Incremental Participants Year 2	11,432
5	Incremental Participants Year 3	11,924
6	Incremental Participants Year 4	0
7	Incremental Participants Year 5	0
8	Cumulative Participation Year 1	10,661
9	Cumulative Participation Year 2	22,093
10	Cumulative Participation Year 3	34,017
11	Cumulative Participation Year 4	34,017
12	Cumulative Participation Year 5	34,017
13	Cumulative Summer Coincident kW w/ losses (net free) Year 1	1,601
14	Cumulative Summer Coincident kW w/ losses (net free) Year 2	3,371
15	Cumulative Summer Coincident kW w/ losses (net free) Year 3	5,316
16	Cumulative Summer Coincident kW w/ losses (net free) Year 4	5,316
17	Cumulative Summer Coincident kW w/ losses (net free) Year 5	5,316
18	Cumulative kWh w/ losses (net free) Year 1	7,601,048
19	Cumulative kWh w/ losses (net free) Year 2	15,937,031
20	Cumulative kWh w/ losses (net free) Year 3	25,091,251
21	Cumulative kWh w/ losses (net free) Year 4	25,091,251
22	Cumulative kWh w/ losses (net free) Year 5	25,091,251
23	Per Participant Weighted Average Coincident Saved Winter kW w/ losses	0.119
24	Per Participant Weighted Average Coincident Saved Summer kW w/ losses	0.182
25	Per Participant Average Annual kWh w/ losses (net free) Year 1	713
26	Per Participant Average Annual kWh w/ losses (net free) Year 2	721
27	Per Participant Average Annual kWh w/ losses (net free) Year 3	738
28	Per Participant Average Annual kWh w/ losses (net free) Year 4	738
29	Per Participant Average Annual kWh w/ losses (net free) Year 5	738
30	Cumulative Lost Revenue (net free) Year 1	\$711,180
31	Cumulative Lost Revenue (net free) Year 2	\$1,525,051
32	Cumulative Lost Revenue (net free) Year 3	\$2,455,634
33	Cumulative Lost Revenue (net free) Year 4	\$2,511,378
34	Cumulative Lost Revenue (net free) Year 5	\$2,568,387
35	Average Lost Revenue per Participant (net free) Year 1	\$67
36	Average Lost Revenue per Participant (net free) Year 2	\$69
37	Average Lost Revenue per Participant (net free) Year 3	\$72
38	Average Lost Revenue per Participant (net free) Year 4	\$74
39	Average Lost Revenue per Participant (net free) Year 5	\$76
40	Total Avoided Costs/MW saved Year 1	\$133,506
41	Total Avoided Costs/MW saved Year 2	\$136,558
42	Total Avoided Costs/MW saved Year 3	\$139,798
43	Total Avoided Costs/MW saved Year 4	\$143,252
44	Total Avoided Costs/MW saved Year 5	\$146,826
45	Total Avoided Costs/MWh saved Year 1	\$42
46	Total Avoided Costs/MWh saved Year 2	\$45
47	Total Avoided Costs/MWh saved Year 3	\$57
48	Total Avoided Costs/MWh saved Year 4	\$59
49	Total Avoided Costs/MWh saved Year 5	\$61

**Attachment C**  
Cost-Effectiveness Evaluation

<b>Smart \$aver Energy Efficiency Program</b>					
		<b>UCT</b>	<b>TRC</b>	<b>RIM</b>	<b>Participant</b>
1	Avoided T&D Electric	\$3,439,913	\$3,439,913	\$3,439,913	\$0
2	Cost-Based Avoided Elec Production	\$14,765,275	\$14,765,275	\$14,765,275	\$0
3	Cost-Based Avoided Elec Capacity	\$4,135,671	\$4,135,671	\$4,135,671	\$0
4	Participant Elec Bill Savings (gross)	\$0	\$0	\$0	\$27,407,749
5	Net Lost Revenue Net Fuel	\$0	\$0	\$17,497,381	\$0
6	Administration Costs	\$1,659,091	\$1,659,091	\$1,659,091	\$0
7	Implementation Costs	-\$745,212	-\$745,212	-\$745,212	\$0
8	Incentives	\$7,776,120	\$0	\$7,776,120	\$7,776,120
9	Other Utility Costs	\$2,620,086	\$2,620,086	\$2,620,086	\$0
10	Participant Costs	\$0	\$17,160,567	\$0	\$20,451,777
11	Total Benefits	\$22,340,859	\$22,340,859	\$22,340,859	\$35,183,869
12	Total Costs	\$11,310,086	\$20,694,533	\$28,807,467	\$20,451,777
13	<b>Benefit/Cost Ratios</b>	<b>1.98</b>	<b>1.08</b>	<b>0.78</b>	<b>1.72</b>
<b>Data represents present value of costs and benefits over the life of the program.</b>					



RESIDENTIAL ENERGY EFFICIENT APPLIANCES AND DEVICES (SC)

PURPOSE

The purpose of this program is to encourage the installation new energy efficiency appliances and equipment in new or existing residences.

PROGRAM

- Incentives are available to builders of new residences or to owners of, or customers occupying, new or existing residences served on a Duke Energy residential rate schedule from Duke Energy Carolinas' retail distribution system provided, however, that incentives for energy efficient products considered to be fixtures are available only to builders or owners of residences served on the Duke Energy Carolina's retail distribution system.
- The types of equipment eligible for incentives may include but are not limited to the following:
  - High efficiency lighting and equipment
  - High efficiency electric water heating low flow devices
  - Other high efficiency equipment as determined by the Company on a case by case basis.
- Incentives may be offered in a variety of ways including, but not limited to discount coupons, in-store promotions, on-line discounted purchases, etc.
- Incentives under this program are only available for ENERGY STAR or other energy efficiency products for which incentives pass the Company's Utility Cost Test (UCT).
- The Company may vary the incentive by type of equipment and differences in efficiency in order to provide the minimum incentive needed to drive customers to purchase higher efficiency equipment.
- The Company reserves the right to adjust the incentive for specific equipment on a periodic basis as equipment efficiency standards change and as customers naturally move to purchase higher efficiency equipment.
- The amount of the incentive payment for various standard types of equipment will be filed with the Commission, for information, and posted to the Company's website at [www.duke-energy.com](http://www.duke-energy.com).
- Incentives may be limited to one of any product, per residence, under all Duke Energy Carolinas' Energy Efficiency Programs.
- With Company approval, the builder, owner or customer may designate that incentive be provided to the vendor or other third-party.
- Incentives for certain products will be provided only in conjunction with incentives provided by manufacturers, distributors, or retailers during promotional periods.

PAYMENT

- The Company's incentive are as follows:
  - High efficiency lighting equipment and electric water heating low flow devices will be an incentive of up to 100% of the installed cost difference between standard equipment and higher efficiency equipment.
  - For all other appliances and devices provided under this program the incentive will be an amount up to 50% of the installed cost difference between standard equipment and higher efficiency equipment.

Duke Energy Carolinas, LLC

Electricity No. 4  
South Carolina First Revised Leaf No. 158  
Superseding South Carolina Original Leaf No. 158

RESIDENTIAL ENERGY EFFICIENT APPLIANCES AND DEVICES (SC)

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PROGRAM

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- The types of equipment eligible for incentives may include but are not limited to the following:
  - High efficiency lighting and equipment
  - High efficiency electric water heating low flow devices
  - Other high efficiency equipment as determined by the Company on a case by case basis.
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- With Company approval, the builder, owner or customer may designate that incentive be provided to the vendor or other third-party.
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PAYMENT

- The Company's incentive are as follows:
  - High efficiency lighting equipment and electric water heating low flow devices will be an incentive of up to 100% of the installed cost difference between standard equipment and higher efficiency equipment.
  - For all other appliances and devices provided under this program the incentive will be an amount up to 50% of the installed cost difference between standard equipment and higher efficiency equipment.

Deleted: <#>High efficiency pool pumps\*¶  
<#>High efficiency heat pump water heater\*¶

Deleted: \*Available only to owner-occupied, or  
builders of, single-family residences.¶

Deleted: <#>A high efficiency pool pump has  
an initial incentive of \$300 and a maximum  
incentive of \$450. ¶  
<#>The incentive for a heat pump water heater is  
\$350.¶

Deleted: Original

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Deleted: 2013-298-E¶

Deleted: 2013-889

South Carolina, First Revised Leaf No. 158

Effective for service on and after

PSCSC Docket No. Order No. Page 1 of 1

RESIDENTIAL HVAC ENERGY EFFICIENCY PROGRAM  
TUNE AND SEAL (SC)

## PURPOSE

The purpose of this program is to reduce energy usage for thermal conditioning in a residence through installation of energy efficiency measures and equipment maintenance to improve operating efficiency.

## PROGRAM

- Payments are available to owners of existing individually-metered residences, condominiums and mobile homes served on a Duke Energy Carolinas' residential rate schedule from Duke Energy Carolinas' retail distribution system.
- Payments are available for one or more of the following services performed at the customer's residence:
  1. Heating Ventilation and Air Conditioning (HVAC) Tune Up
    - HVAC Tune-Up must include appropriate system checks, repairs, replacement of parts, correction of refrigerant charge, and adjustment of airflow.
    - The customer is eligible for only one HVAC Tune Up payment over the life of the equipment.
  2. Attic Insulation and Air Sealing
    - The level of attic insulation in the residence must be increased from a minimum of R-19 prior to improvement to at least R-30.
    - Air leakage must be reduced through sealing by at least of 5% as demonstrated by test before and after sealing is performed.
  3. Duct Insulation
    - A minimum of 1000 square feet of conditioned floor area must be served by the duct system improvement.
    - The level of duct insulation in attics must be increased from a minimum of R4-2 prior to improvement to at least R-19.
    - The level of duct insulation in unconditioned basements or crawlspaces must be increased from R-0 prior to improvement to at least R-6.
  4. Duct Sealing
    - Ducts must be sealed such that duct leakage is reduced by at least 12% as demonstrated by test before and after sealing is performed.
- All improvements eligible for payment under this program must be performed or installed by a Duke Energy Carolinas approved contractor.
- All improvements eligible for payment under this program must be installed based on manufacturer's recommendations and the Company's specifications. Detailed requirements are available on the Company's website at [www.duke-energy.com](http://www.duke-energy.com).
- To qualify for payment under this program, qualifying improvements must be made on or after January 1, 2014 and the application for payment must be made within 90 days of completion of the work.

## PAYMENT

Payment for qualifying improvements will be made to the owner (or his designee) in a rebate check or other payment method, including but not limited to a trade-ally rebate, gift card or prepaid credit card as follows:

<u>Measure</u>	<u>Initial Incentive</u>	<u>Maximum Incentive</u>
Attic insulation and sealing	\$250	\$300
Duct sealing	\$100	\$150
Duct insulation	\$ 75	\$200
Central air conditioning tune up	\$ 50	\$ 60
Heat pump tune up	\$ 50	\$ 60